Assessment Ideas - Designing a Safe Car

Content Standards (Current WA State)

**PS1A** - Create a graph given data.  Use graph/data to calculate speed

**PS1B** - Change the materials (wheels/ramp) predict which car would travel faster and explain why (friction)

**PS1C** - CER Are the forces acting on the car balanced or unbalanced?

**PS1D** - Two cars with different masses traveling at the same velocity.  Which car will change its speed (decelerate) faster when it collides with the table?  Explain how you know.

**INQE -** What are the strengths/weaknesses of using an egg as a model?  Can you think of a better option?

Engineering Design Content

**MS-ETS1-1** -What was the goal (criteria) of the project?  What (real-world) problem does this project address?  What were some limitations (constraints) of the project?

**MS-ETS1-2** - Using data from all classes.  Scatter plot?  Which car was the most successful?  How do you know that it met the criteria?

**MS-ETS1-3** - What are some characteristics of the fastest cars?  What are some characteristics of the safe cars?  How could you combine these features into one car to create a model that better meets the criteria?

SCIENCE 8 NAME

EGG CAR ASSESSMENT PERIOD

DATE

**Directions**: Complete the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Car** | **Distance** | **Time** | **Speed (m/s)** | **Survived?** |
| A | 1.5 m | 6.2s |  | Yes |
| B | 1.5 m | 3.1s |  | Yes |
| C | 1.5 m | 1.4s |  | No |
| D | 1.5 m | 4.3s |  | Yes |

Which car above most successfully met the project criteria of speed and safety?  Make a **claim** and support it with **evidence** and **reasoning**. (CER format)

**Claim** (a sentence that directly responds to the question).

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**Evidence** (relevant data that supports your claim).

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**Reasoning** (Explain why the evidence supports the claim).

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Choose another vehicle and explain why it doesn’t meet the criteria.

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| --- | --- | --- | --- | --- |
|  | 4 | 3 | 2 | 1 |
| Claim |  | Claim is accurate and relevant to question. | Claim is accurate or relevant to question, but not both. | Claim is inaccurate or irrelevant |
| Evidence |  | Provided data accurately supports the claim. Only relevant data is included | Included irrelevant data. | No quantitative data included |
| PS1A |  | Correctly calculated speed | Simple computational errors | Does not demonstrate understanding of calculating speed |
| Reasoning  MS-ETS1-1 Criteria | Tie in additional science content (decel/force)  Rebuttal | Identifies high speed and survival as successful | Provides insufficient reasoning to show understanding of criteria | No criteria |